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MEMORANDUM

DATE 4 November 1998

TO. David Bennett, WAM, U.S. EPA, Region X

FROM. RM Roger McGinnis, Senior Environmental Chemist, WESTON, Seattle

SUBJECT Validation of Grainsize Data
Laboratory Batch 1001-007-14
Site Duwamish River

WORK ASSIGNMENT NO . 46-23-0JZZ

WORK ORDER NO.: 4000-019-038-5200-00

DOC. CONTROL NO.: 4000-019-038-AAAK

cc: Bruce Woods, RAP-WAM, U S EPA, Region X
Dena Hughes, Site Manager, WESTON, Seattle
Kevin Mundell-Jackson, Database Management, WESTON, Seattle

The quality assurance review of 20 sediment samples, laboratory batch 1001-007-14, collected from the Duwamish River has been completed. The sediment samples were analyzed for grainsize by Rosa Environmental using the PSEP modification to ASTM Method 422. The samples were numbered:

98364007	98364011	98364015	98364019	98364023
98364008	98364012	98364016	98364020	98364024
98364009	98364013	98364017	98364021	98364025
98364010	98364014	98364018	98364022	98364026

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality control criteria described in the technical specifications of the laboratory subcontract.

1. Sample Holding Times—Acceptable

   All samples were cooled with ice or refrigerated from the time of collection until analysis. A maximum holding time of six months was specified in the Duwamish River Sampling and Analysis Plan. All grainsize analyses were performed within 23 days of sample collection.

2 Laboratory Triplicate Analysis—Acceptable

   Triplicate analysis was performed on sample 98364007 The laboratory triplicate percent relative standard deviation was within quality control limits of less than 25 percent for all fractions

3. Field Duplicate Analysis—Acceptable

   Samples 98364011 and 98364012 were field duplicates The relative percent differences (RPDs) between duplicate measurements was within quality control limits of 35 percent for all fractions.

4. Sieve Sample Recovery

   Combined sieve fraction weights were within recovery limits of 80 to 120 percent compared to the initial dry sieve sample weight for all samples.

   [OR]

   Combined sieve fraction weights were within limits of 80 to 120 percent compared to the initial dry sieve sample weight for all samples except

Sample	Percent Recovery
98364014	75 9
98364015	78 6
98364016	65 8
98364017	78 3
98364017 replicate 2	75 3

Sample	Percent Recovery
98364017 replicate 3	77 8
98364018	61.4
98364024	66 2

Results for the sand classes associated with the sample numbers listed above were qualified as estimated (J)

5. Pipette Sample Recovery

Sample size for pipette analysis of silt and clay fractions was within PSEP guidelines of 5 to 25 grams. Sample recoveries were within QC limits of 80 to 120 percent for all samples except.

Sample	Percent Recovery
98364022	134 2

Results for the silt and clay classes associated with the sample numbers listed above were qualified as estimated (J).

6 Total Sample Recovery

Total combined sample percent recovery (sieve and pipet) was within QC limits of 95 to 105 percent.

7. Sample Analysis

All laboratory deliverables were present and complete No problems were noted

8 Laboratory Contact

No laboratory contact was required.

Data Assessment

Upon consideration of the data qualifications noted above, the data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values

Data Qualifiers

U - The compound was analyzed for, but was not detected.

UJ - The compound was analyzed for, but was not detected The associated quantitation limit is an estimate because quality control criteria were not met

J - The analyte was positively identified, but the associated numerical value is an estimated quantity because quality control criteria were not met or because concentrations reported are less than the quantitation limit or lowest calibration standard.

R - Quality control indicates that data are unusable (compound may or may not be present) Resampling and reanalysis are necessary for verification.

Rosa Environmental Geotechnical Laboratory, LLC

Roy F. Weston, Inc
Project No · 4000-027-001-2019-38

Apparent Grain Size Distribution Summary
Percent Finer Than Indicated Size

Sample No	Gravel			Very Coarse Sand	Coarse Sand	Medium Sand	Fine Sand	Very Fine Sand	Silt				Clay	
Phi Size	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10
Sieve Size (microns)	3/8"	#4	#10 (2000)	#18 (1000)	#35 (500)	#60 (250)	#120 (125)	#230 (62)	31.00	15.60	7 80	3 90	2 00	1 00
98364007	100 00	100 00	99 69	97.69	89 56	76.54	69 37	61 19	53.49	43 63	31 42	23 32	16 90	11 92
98364008	100 00	100 00	99 66	99 23	97 54	94 56	92 76	85 90	72.06	53 36	34.75	23 53	14 99	10.20
98364009	100 00	100 00	99 05	98 04	94 54	87 55	82.29	74 99	65 00	42 95	22 60	15 11	10 73	7 14
98364010	100 00	98 23	96 95	96.02	94 46	92.45	90.24	85 64	76 29	59 61	37 78	26 14	17 44	11 54
98354011	100.00	94 77	92 51	90 52	88.19	85 42	82 71	78.59	69 68	54.55	37 82	25 13	16 51	10 94
98364012	100 00	100 00	95.91	93 71	90 82	90 54	87.78	83.72	73 64	57.63	40.62	26 58	17.58	11 82
98364013	100 00	98 92	97 61	96 18	87.84	47.28	25 50	21.92	18 36	13.77	9 52	6 27	4.28	2 89
98364014	100 00	100 00	100 00	99.94 J	99 19 J	98.10 J	97 26 J	95 02 J	87.62	63 21	42 29	26 10	17 67	12 12
98364015	100 00	100.00	98 62 J	97.50 J	96 15 J	95 02 J	93 76 J	89 94 J	74 94	57 55	38 24	25 04	17 39	11 94
98364016	100 00	100 00	100 00	99.98 J	99 26 J	98.15 J	96 46 J	88 57 J	77.63	57 86	41 29	26 47	17 58	11 74
98364017	100 00	100 00	100.00	99 71 J	98.24 J	96 24 J	94 50 J	88.48 J	71 26	50 82	33.20	21 34	14 73	10 34
98364017 (2)	100 00	100 00	99 99 J	99 59 J	97 52 J	95 40 J	93.78 J	87 61 J	72 46	50 83	33 25	21 27	14 44	10 22
98364017 (3)	100 00	100 00	99 93 J	99 33 J	97 90 J	96.42 J	94 94 J	89.06 J	72 86	51 72	33 69	20.17	14 81	10 17
98364018	100 00	100 00	100 00	99 14 J	97 77 J	97 07 J	96 28 J	93.92 J	76 80	47 02	27 95	17 35	12 23	8 72
98364019	100 00	100 00	99 82	99 33	97 84	92 78	84 88	76.19	60 58	38 44	24 42	14 72	9 47	6 27
98364020	100 00	97 96	95 11	90 60	68 04	32 50	21 72	16 12	10 67	7 87	5 38	3 41	2 20	1 36
98364021	100.00	100 00	98.91	95 22	88 04	75 71	61 55	47 50	35 63	17 62	11 08	7 86	6 19	4 92
98364022	100 00	100 00	99 63	99.24	95 06	64 85	37.10	13 39	5 68 J	4.27 J	3 31 J	2 51 J	1 71 J	1 52 J
98364023	100 00	96 26	93 65	92 05	89 78	84.16	77 68	70.44	60 66	48 37	31.04	21 77	14 98	9 94
98364024	100 00	100 00	100 00	99 55 J	98 79 J	98.35 J	97.90 J	97 02 J	90 49	65 11	39 08	24 58	16 40	11 41
98364025	100 00	99.86	99 78	99 26	96 41	88 00	81.80	76.19	66 97	46 81	28 81	17 23	11 91	8 14
98364026	100 00	100 00	100 00	99 53	98 48	96.96	86.88	69 78	52 27	31 84	18 17	11.75	8 38	5 70

Notes to the Testing

1 Apparent grain size distributions according to PSEP protocols

TRM
10/26/98

10.04